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The SERIES H HYBRID MICROCIRCUITS are devices selected for the Commercial/Industrial user where epoxy-encapsulated transistors may be used in moderate environments at operating temperatures within the range of -30°C to $+100^{\circ}\text{C}$. Storage temperatures may range from -55°C to $+125^{\circ}\text{C}$.

Intellux hybrid microcircuits comprise a family of compatible digital logic and accessory circuits made up of passive thin-film and semiconductor devices. Passive components are deposited on the surface of a glass substrate, hermetically sealed with one or more fused glass superstrates, and interconnected with superposed, photo-etched silver and gold-plated copper patterns. The thin film resistors and capacitors are terminated along the long edges of $1/2'' \times 3/8'' \times 1/16''$ substrate by means of lands to which the leads of a 13-lead header are soldered. The leads are bonded to the header, which is secured to the substrate chip with epoxy resin. Therefore, the electrical connections between the passive chip components and the header leads are unaffected by thermal or mechanical stresses induced by handling or soldering of the microcircuits.

Transistors and subminiature diodes are housed within, and secured to, the glass-filled diallyl phthalate header, which provides a suitable structural form for the finished microcircuit. Transistors are provided in epoxy packages. The semiconductors are welded to the header leads and are thereby connected to the passive thin-film components. Protection against moisture traps is ensured through the application of a final epoxy conformal coating. The completed microcircuit can be affixed to printed circuit or multilayer boards by conventional fabrication methods.

ENVIRONMENTAL DATA

Operating Temperature Range: -30°C to $+100^{\circ}\text{C}$

Storage Temperature Range: -55°C to $+125^{\circ}\text{C}$

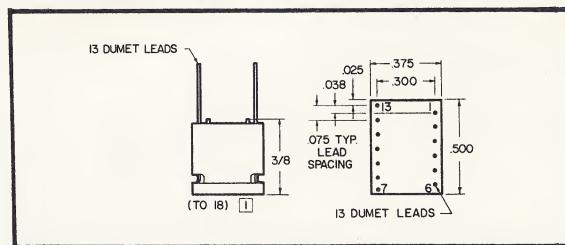
PHYSICAL DATA

Outline Dimensions: $3/8''\text{h}$

Weight: Approximately 2 grams

Leads: Gold-plated Dumet, $0.020''$ diameter $\times 0.300''$ minimum length, spaced on $0.075''$ centers.

INSTALLATION DIAGRAM



FLIP-FLOP TYPES	R T L			R C T L		
	Sch. No.	1/2 Std. Ω/\square	Std. Ω/\square	Sch. No.	1/2 Std. Ω/\square	Std. Ω/\square
R-S Flip-Flop	50	GG1413BH	GG1513BH	150	GG3415CH	GG3515CH
J-K Flip-Flop	40	FF2413BH	FF2513BH	140	FF4415CH	FF4515CH
T or D Flip-Flop	30	FF1413BH	FF1513BH	130	FF3415CH	FF3515CH
R/S-T or R/S-D Flip-Flop	31	FF1413GH	FF1513GH	131	FF3415HH	FF3515HH
Clamped T or Clamped D Flip-Flop	32	FF1413LH	FF1513LH	132	FF3415MH	FF3515MH

NOR/NAND GATE TYPES	R T L			R C T L		
	Sch. No.	1/2 Std. Ω/\square	Std. Ω/\square	Sch. No.	1/2 Std. Ω/\square	Std. Ω/\square
Dual-3 Input NOR/NAND Gate	50	GG1413BH	GG1513BH	150	GG3415CH	GG3515CH
5-Input NOR/NAND Gate	60	GG2413BH	GG2513BH	160	GG4415CH	GG4515CH
3-Input Buffered NOR/NAND Gate	10	GB1413BH	GB1513BH	110	GB2415CH	GB2515CH
3-Input NOR/NAND Gate and Buffer	11	GB1413GH	GB1513GH	111	GB2415HH	GB2515HH

ACCESSORY CIRCUIT TYPES	Sch. No.	Type No.	Remarks
Steering Circuit (For up-down counting)	90 90 190 190	UD1413BH UD1513BH UD2415CH UD2515CH	For use with FF1413BH For use with FF1513BH For use with FF3415CH For use with FF3515CH
Delay Multivibrator	22 23 23	DM4410BH DM3510BH DM3710BH	Short delay (100 nsecs to 100 usecs) Medium delay (10 usecs to 10 msec) Long delay (100 usecs to 1 second)
Schmitt Trigger	83 83 81 81	ST2415LH ST2514LH ST2415BH ST2514BH	High speed squaring (5 MHz typical) Medium speed squaring (1 MHz typical) ST2415LH with isolated bias ST2514LH with isolated bias
Current Driver	1	CD1513BH	For loads to 100 mA
Dual Relay Driver	74 74	RD1513HD RD1413KD	For loads to 100 mA @ 15 volts max. For loads to 330 mA @ 30 volts max.

LOGIC MICROCIRCUITS

QUANTITY	1-50	51-100	101-500	501-1000
J-K FLIP-FLOP				
FF2413BH	6.00	5.25	4.25	3.50
FF2513BH	6.00	5.25	4.25	3.50
FF4415CH	7.50	6.50	5.50	4.50
FF4515CH	7.50	6.50	5.50	4.50
TRIGGER FLIP-FLOP OR DELAY FLIP-FLOP				
FF1413BH	6.00	5.25	4.25	3.50
FF1513BH	6.00	5.25	4.25	3.50
FF3415CH	7.50	6.50	5.50	4.50
FF3515CH	7.50	6.50	5.50	4.50
R/S-T OR R/S-D FLIP-FLOP				
FF1413GH	6.50	5.75	4.75	4.00
FF1513GH	6.50	5.75	4.75	4.00
FF3415HH	8.00	7.00	6.00	5.00
FF3515HH	8.00	7.00	6.00	5.00
CLAMPED-T OR CLAMPED-D FLIP-FLOP				
FF1413LH	7.00	6.25	5.25	4.50
FF1513LH	7.00	6.25	5.25	4.50
FF3415MH	8.50	7.50	6.50	5.50
FF3515MH	8.50	7.50	6.50	5.50
DUAL 3-INPUT NOR/NAND GATE OR R-S FLIP-FLOP				
GG1413BH	5.00	4.25	3.25	2.50
GG1513BH	5.00	4.25	3.25	2.50
GG3415CH	6.50	5.50	4.50	3.50
GG3515CH	6.50	5.50	4.50	3.50
5-INPUT NOR/NAND GATE				
GG2413BH	5.00	4.25	3.25	2.50
GG2513BH	5.00	4.25	3.25	2.50
GG4415CH	6.50	5.50	4.50	3.50
GG4515CH	6.50	5.50	4.50	3.50
3-INPUT BUFFERED NOR/NAND GATE				
GB1413BH	5.50	4.75	3.75	3.00
GB1513BH	5.50	4.75	3.75	3.00
GB2415CH	7.00	6.00	5.00	4.00
GB2515CH	7.00	6.00	5.00	4.00
3-INPUT NOR/NAND GATE AND BUFFER				
GB1413GH	5.50	4.75	3.75	3.00
GB1513GH	5.50	4.75	3.75	3.00
GB2415HH	7.00	6.00	5.00	4.00
GB2515HH	7.00	6.00	5.00	4.00

(Ordering data on reverse side)

ACCESSORY MICROCIRCUITS

QUANTITY	1-50	51-100	101-500	501-1000
STEERING CIRCUIT				
UD1413BH	6.00	5.25	4.25	3.50
UD1513BH	6.00	5.25	4.25	3.50
UD2415CH	7.50	6.50	5.50	4.50
UD2515CH	7.50	6.50	5.50	4.50
DELAY MULTIVIBRATOR				
DM4410BH	8.00	7.25	6.25	5.25
DM3510BH	8.25	7.50	6.50	5.50
DM3710BH	8.50	7.75	6.75	5.75
SCHMITT TRIGGER				
ST2415LH	9.50	8.50	7.50	6.50
ST2514LH	9.50	8.50	7.50	6.50
ST2415BH	9.50	8.50	7.50	6.50
ST2514BH	9.50	8.50	7.50	6.50
CURRENT DRIVER				
CD1513BH	8.50	7.75	6.75	5.75
DUAL RELAY DRIVER				
RD1513HD	8.50	7.75	6.75	5.75
RD1413KD	10.25	9.25	8.25	6.75

ORDERING DATA

DELIVERY:	All items generally available from stock.
TERMS:	Net 30 days.
F.O.B.	Goleta, California
MIXED LOT:	Special pricing for mixed lots in excess of 500 pcs.
VOLUME PRICING:	Pricing from manufacturer for quantities in excess of 1000 pcs.